Section 2: Introduction

2.1 The Lake Huron Basin

The Lake Huron drainage basin is unique in the Great Lakes system, both as the lake in the middle of the Great Lakes and due to its abundance of shoreline habitat. Lake Huron has over 30,000 islands and, as a result, has the longest shoreline of any lake in the world. Its expansive open-lake waters, large watershed area and relatively undisturbed nearshore areas support a high diversity of aquatic and riparian species of importance to the Great Lakes region.

The Lake Huron watershed is home to about 2.5 million people. Both sides of Lake Huron have relatively low human population densities. As a result Lake Huron retains much of its historic fish and wildlife habitat. Saginaw Bay, Georgian Bay and the North Channel still support some of the most extensive high quality coastal habitat in the Great Lakes.

The U.S./Canada border divides Lake Huron almost in half. The Canadian portion of the Lake, including Georgian Bay, is wholly in the Province of Ontario. The U.S. portion is located entirely within the State of Michigan. The drainage basin on the Ontario side (86,430 square kilometers or 33,500 square miles) covers twice the area, has approximately five times the shoreline, and roughly 300,000 fewer residents than in Michigan.

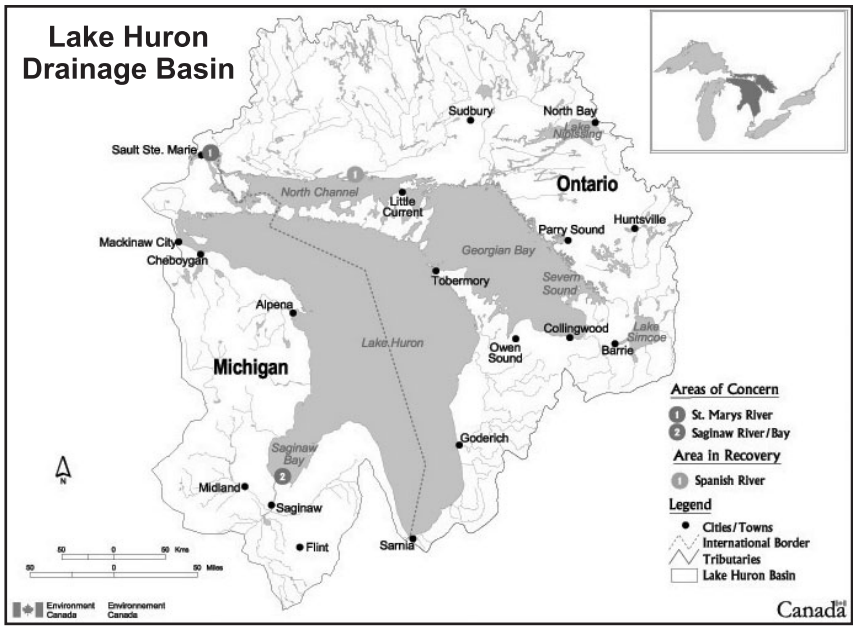

Figure 2.1

The Lake Huron basin contains no major metropolitan areas. The largest urban centers in the basin are Sudbury and Sarnia on the Ontario side and Saginaw and Bay City on the Michigan side. With populations under 100,000, these urban areas are relatively small compared to urban areas in the more populous Great Lake basins. The Lake Huron basin is heavily forested in the northern portion and then becomes increasingly agricultural in the south with its urbanized areas along the southernmost portion of the lake. Much of southern part of the Huron basin is devoted to intensive cultivated field crops and, beef and dairy farms, particularly in the "thumb" area of Michigan, along the Bruce Peninsula and the southeast shore of the main basin. Mining of limestone, nickel, uranium, copper, platinum and gold has been an important activity in the northern portion of the Lake Huron basin. Though residential land use makes up a small percentage of total land use, much rural development has occurred along the shoreline. In the past 20 years there has been increasing development pressure for cottages and year-

General Lake Huron Facts

Length (miles)	206
Breadth (miles)	183
Average depth (feet)	195
Maximum depth (feet)	750
Volume (cubic miles)	850
Water surface (square miles)	23,000
Watershed area (square miles)	51,700
Shoreline length (miles w/islands)	3,827
Retention time (years)	22.6
Total population	2,694,154
Michigan	1,502,687
Ontario	1,191,467
Islands	more than 30,000

Source: Environment Canada/U.S. Environmental Protection Agency, 1996

Figure 2.2

round retirement properties. Undoubtedly, the next 20 years will bring more as urban populations grow and the retired population increases.

In 1987, four Areas of Concern (AOCs) were identified in the Lake Huron basin in addition to the St. Marys River. Within the basin two AOCs, Saginaw Bay, Michigan, and Spanish Harbour, Ontario remain. The causes of impairment within the AOCs are being addressed, and habitat, fish and wildlife populations, and environmental quality are recovering. Canada and Ontario have recognized Spanish Harbour as an "Area in Recovery" where all remedial actions have been implemented and the environment will take some time to respond and the goals to be achieved. Severn Sound, Ontario was delisted as an AOC in 2003 and the Collingwood Harbour AOC, also in Ontario, was delisted in 1994. The St. Marys River is being addressed through a binational process.

Lake Huron is the third largest freshwater lake in the world in terms of area, and the sixth largest in volume and boasts the largest island (Manitoulin) of any freshwater lake on Earth. The retention time for water in Lake Huron is 22 years, and the average depth is 59 metres (195 feet). This long retention time and large surface area have resulted in the build up of persistent substances that bioaccumulate in fish and wildlife.

The diverse shoreline of Lake Huron is the longest of the Great Lakes, its length extended by the shores of its numerous islands. Rocky shores associated with the Precambrian shield cover the northern and eastern shores, limestone dominates the shores of Manitoulin Island and the northern shore of the Bruce Peninsula, and glacial deposits of sand, gravel, and till predominate in the western, southern, and south-eastern portions of the shore. Shoreline and inshore habitats are correspondingly diverse.

Along the Canadian shore of Lake Huron, loss of wetland habitat on a large scale has not occurred because most of the shoreline is sparsely populated. Losses tend to be concentrated around the small urban centers that dot the shore. Within the last 10 years, there has been incremental and site-specific loss of wetland area from agricultural encroachment and cottage development. Over 40 species of rare plants, 5 rare reptile species, and 59 fish species use the coastal wetlands of Lake Huron.

2.2 The Partnership

In 2002, the federal, state and provincial agencies that manage binational environmental activities under the Great Lakes Water Quality Agreement formally endorsed the formation of a Lake Huron Binational Partnership in order to prioritize and coordinate environmental activities in the Lake Huron basin. The United States Environmental Protection Agency (USEPA), Environment Canada (EC), Michigan's Departments of Environmental Quality (MDEQ) and Natural Resources (MDNR) and Ontario's Ministries of Environment (MOE) and Natural Resources (MNR) form the core of the Partnership, by providing leadership and coordination. However the Partnership emphasizes the importance of maintaining a flexible membership which is inclusive of other agencies and levels of government, Tribes/First Nations, non-government organizations and the public on an issue-by-issue basis.

This partnership builds upon the efforts begun by the Michigan Department of Environmental Quality's Office of the Great Lakes in their Lake Huron Initiative. Through the Lake Huron Initiative priority actions were identified for the Lake Huron Basin regarding use impairments, critical pollutants, habitat, and biodiversity. The Lake Huron Initiative developed an Action Plan for Lake Huron in 2000 and updated in 2002 which outlined priority programs and initiatives. Many of these activities are now being addressed through the Lake Huron Binational Partnership.

The Partnership facilitates information sharing and priority setting for binational environmental protection and restoration activities of importance in the Lake Huron basin and also promotes cooperation and collaboration towards shared objectives that can not be accomplished by individual agencies alone.

Public consultation is an important component of the Partnership's activities in the Lake Huron basin particularly on a project specific level. Those individuals and organizations which have a direct interest in an issue will be targeted to participate or provide input to project direction and implementation. The agencies in the Partnership will work with existing mechanisms and groups as much as possible to consult and provide information to the public. The Lake Huron mailing list, through which general information will

be provided, includes municipal governments, environmental organizations, special interest groups and members of the public. A series of stand-alone fact sheets has been produced on the following topics: The Binational Partnership; Contaminants in Fish; Contaminants in Wildlife; Developing Environmental Objectives for Fish Communities; Lake Huron GIS; and Changes in the Lake Huron Fish Community.

The Partnership is an action-oriented process for identifying priority issues and efforts needed to ensure a healthy Lake Huron watershed. The binational work plan includes U.S., Canadian, and joint actions focused on short term project implementation and longer-term priority setting.

2.3 The Issues

The participants of the Partnership have agreed upon three initial binational issues to focus on:

- **contaminants in fish and wildlife,**
- **biodiversity and ecosystem change, and**
- **fish and wildlife habitat.**

These key issues were given priority for immediate action while other issues will be tracked and added as the Partnership pursues an iterative process of updating and expanding activities over time.

The subject areas that are being addressed through the efforts of the Partnership include:

- Status and trends of contaminants in fish and wildlife, chemicals causing fish consumption restrictions. The identification of potential sources and implementation of reduction measures.
- Scope and causes of observed changes in ecosystem structure and function. The impact of invasive species on food web dynamics, fish communities and biodiversity.
- Status and trends of fish and wildlife populations and habitat. The evaluation, protection and restoration of critical habitat such as wetlands, fish spawning areas and nesting sites for waterbirds.

While these topics are being addressed binationally, other issues are managed domestically. These include the restoration of beneficial uses in the Areas of Concern, and other local issues such as fouling of beaches by algae and bacteria. The Partnership facilitates the sharing of information between countries on these domestic issues.

In order to streamline activities and minimize costs, the Partnership will work closely with existing programs. One example of this effort is the close tie to the Great Lakes Fishery Commission's Lake Huron Technical Committee and activities such as the development of Environmental Objectives. The basin's size and multiple bi-national political jurisdictions, require coordination among programs as well as special basinwide and local initiatives. While governmental agencies are in a position to provide leadership, success will depend on leveraging both governmental and non-governmental organization involvement and resources. Success will also require engaging local governments whose authority and local decision-making collectively has a significant impact on the natural resources and sustainability of communities throughout the Lake Huron Basin.